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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/553,374	04/20/2000	Edward S. Ellis	GJH-0019	5094
7590 03/23/2004			EXAMINER	
EXXONMOBIL RESEARCH AND ENGINEERING COMPANY			JOHNSON, JERRY D	
P.O. BOX 900			ART UNIT	
ANNADALE, NJ 08801-0900			PAPER NUMBER	

1764

DATE MAILED: 03/23/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 09/553,374	<b>Applicant(s)</b> ELLIS ET AL.	
	<b>Examiner</b> Jerry D. Johnson	<b>Art Unit</b> 1764	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
  - If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
  - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
  - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 08 March 2004.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-7, 10-20, 23 and 24 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-7, 10-20, 23 and 24 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

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A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on March 8, 2004 has been entered.

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 1-7, 10-15, 18-20 and 23-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Harrison et al. in view of Cherpeck.

Harrison et al., U.S. Patent 5,292,428, teach a process wherein hydrocarbon feedstock is passed through two or more hydrodesulfurization zones and connected in a series each containing a packed bed of solid catalyst. The liquid is passed from the first zone to the next until the final zone. Make up hydrogen is supplied to a hydrodesulfurization zone (i) other than the first hydrodesulfurization zone; hydrogen-containing gas is recovered from each hydrodesulfurization zone. The first hydrodesulfurization zone is supplied with hydrogen-containing gas recovered from a subsequent hydrodesulfurization zone (abstract). If the feedstock is, for example a diesel feedstock then the reaction conditions used in the process will typically be chosen to reduce the residual sulphur content to about 0.5 wt % S or less, e.g. about 0.3 wt % S or less, even down to about 0.05 wt % S or less and to reduce the aromatics content to about 27 volume % or lower, e.g. to about 20 volume % or less (column 9, lines 35-41). There will be used an amount of hydrogen which is equivalent to at least the stoichiometric amount of hydrogen required to desulphurise the feedstock and to achieve the desired degree of

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dearomatisation. Normally it will be preferred to use at least about 1.05 times such stoichiometric amount of hydrogen (column 10, lines 3-9). The process can be carried out in a plant having two hydrodesulphurisation zones or in one having more than two such zones, for example 3, 4, 5, or more (column 10, lines 22-25). Depending on the nature of the feedstock and the temperature profile through the reaction stages of the plant and upon the relative volumetric flows of liquid and gas, the degree of desulphurisation in the latter stages of the reaction and the H<sub>2</sub>S level may allow for a subsequent stage or stages to be added, operating at essentially the same pressure as the rest of the hydrodesulphurisation plant, but aimed at aromatics saturation. In this case the fresh hydrogen-containing gas is fed to the aromatics hydrogenation stage or stages and then to the rest of the hydrodesulphurisation plant (column 15, lines 31-41). Different hydrodesulphurisation conditions may be used in different zones (column 10, lines 26-65). In column 18 of Harrison et al., Tables 1-3, heavy gas vacuum oil feedstock having 2.23 weight % sulphur content is converted to a product having 31 ppm S and 15.9 vol % aromatics. While Harrison et al. teach processing hydrocarbon fractions derived from crude oil, such as gasoline fractions, diesel fuel, gas oils and the like (column 2, lines 18-21), Harrison et al. differ from the instant claims in not disclosing the addition of functional additives to the processed feedstock.

Cherpeck, U.S. Patent 5,516,342, teaches that it is well known that automobile engines tend to form deposits on the surface of engine components and that fuel detergents or “deposit control” additives to prevent or control such deposits and known in the art (column 1, lines 14-26).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to add a detergent or deposit control additive to the processed feedstock of

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Harrison et al. in order to inhibit the formation of deposits in an automotive engine operated on said feedstock.

Claims 16 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Harrison et al. in view of Cherpeck as applied to claims 1-7, 10-15, 18-20 and 23-24 above, and further in view of Haun et al.

Harrison et al. is relied on as above but differ from the instant claims in not teaching a countercurrent aromatics hydrogenation stage or stripping of the liquid stage prior to the aromatics stage.

Haun et al., U.S. Patent 5,114,562, is relied on as teaching countercurrent aromatics hydrogenation and stripping of the liquid stage prior to the aromatics stage, i.e, Haun et al. teach a mineral oil conversion process which includes hydrodesulfurization and hydrogenation steps performed in separate reaction zones. The subject invention specifically relates to the hydrogenation of distillate petroleum fractions to produce low sulfur content products including diesel fuel and jet fuel (column 1, lines 7-13). The feedstock could include virtually any middle distillate (column 4, lines 5-6). Desulfurization conditions employed are those customarily employed in the art for desulfurization of equivalent feedstocks (column 4, lines 29-31). The effluent stream of the desulfurization zone is stripped with a stream of hydrogen-rich gas prior to being fed to the hydrogenation zone (column 6, lines 36-47). The vapor phase portion of the reaction zone effluent stream is partial condensed and the hydrocarbon fraction is preferably passed into the hydrodesulfurization zone to ensure its complete desulfurization (column 6, line 60 to column 7, line 16). The vapor phase stream from the hydrogenation step is highly rich in hydrogen and relatively low in hydrogen sulfide and is "cascaded" to the hydrodesulfurization

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zone (column 8, lines 3-15). Hydrogen-rich gas may flow countercurrent to the liquid-phase hydrocarbons through one or more reaction zones (column 8, lines 26-33).

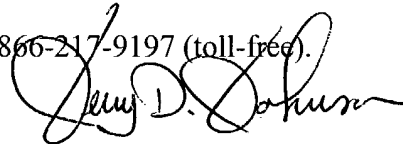
All claims are drawn to the same invention claimed in the application prior to the entry of the submission under 37 CFR 1.114 and could have been finally rejected on the grounds and art of record in the next Office action if they had been entered in the application prior to entry under 37 CFR 1.114. Accordingly, **THIS ACTION IS MADE FINAL** even though it is a first action after the filing of a request for continued examination and the submission under 37 CFR 1.114. See MPEP § 706.07(b). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jerry D. Johnson whose telephone number is (571) 272-1448. The examiner can normally be reached on 6:00-3:30, M-F, alternate Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glen Caldarola can be reached on (571) 272-1444. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Jerry D. Johnson  
Primary Examiner  
Art Unit 1764

jdj